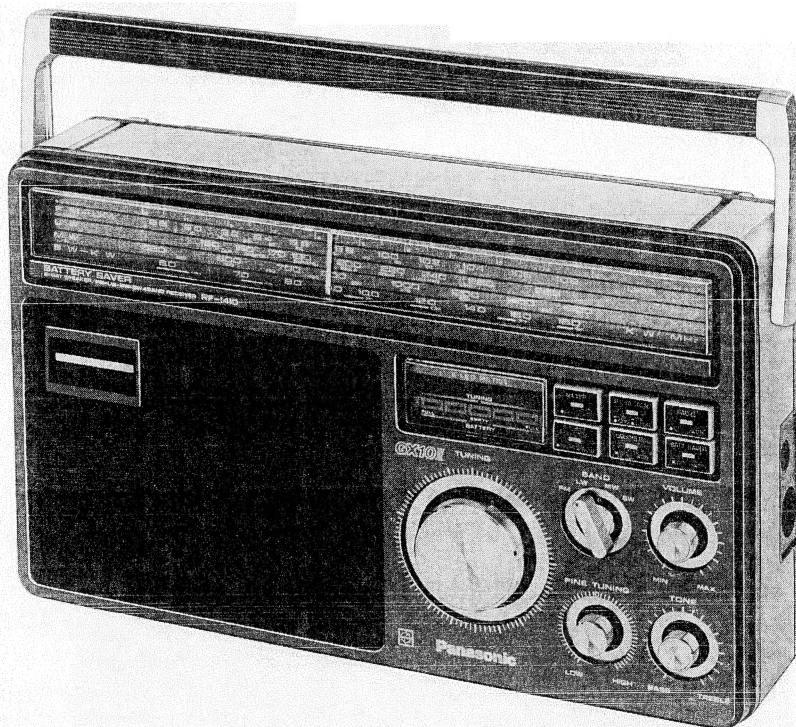


# Service Manual

## Radio RF-1410LBS

FM/LW/MW/SW 4-BAND  
PORTABLE RADIO



### ■ SPECIFICATIONS

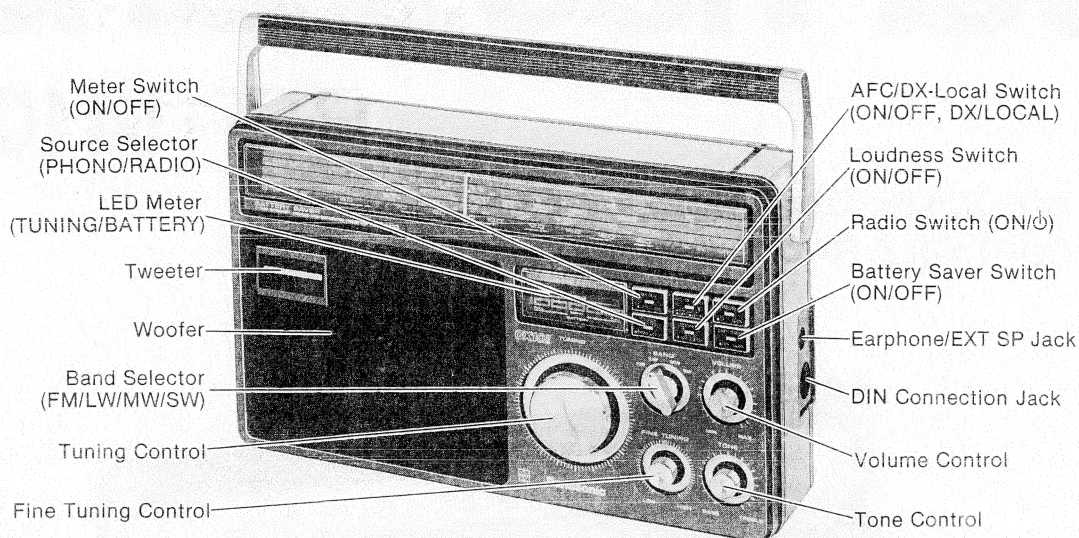
Frequency Range:	FM 87.5~108MHz LW 150~285kHz (2000~1060m) MW 525~1610kHz (571~186m) SW 5.9~18MHz (50.8~16.7m)	Power Consumption:	7W at 120V (AC Only)
Intermediate Frequency:	FM 10.7MHz AM (LW, MW & SW) 455kHz	Speakers:	Woofer; 12cm (5") PM Dynamic Speaker Tweeter; 3cm (1-3/16") PM Dynamic Speaker
Sensitivity:	FM 1.6 $\mu$ V for 50mW Output LW 60 $\mu$ V/m for 50mW Output MW 30 $\mu$ V/m for 50mW Output SW 6 $\mu$ V for 50mW Output	Dimensions:	11-3/8"(Wide) $\times$ 7"(High) $\times$ 3-3/16"(Deep) (289 $\times$ 177 $\times$ 80)mm
Power Source:	AC 110~125/220~240V 50/60Hz or DC 7.5V (Five "D" Size Flashlight Batteries) (National UM-1 or equivalent)	Weight:	4 lb. 6.5 oz. (2kg) without batteries
		Impedance:	Speaker.....8 $\Omega$ Earphone Jack .....8 $\Omega$

Specifications are subject to change without notice.

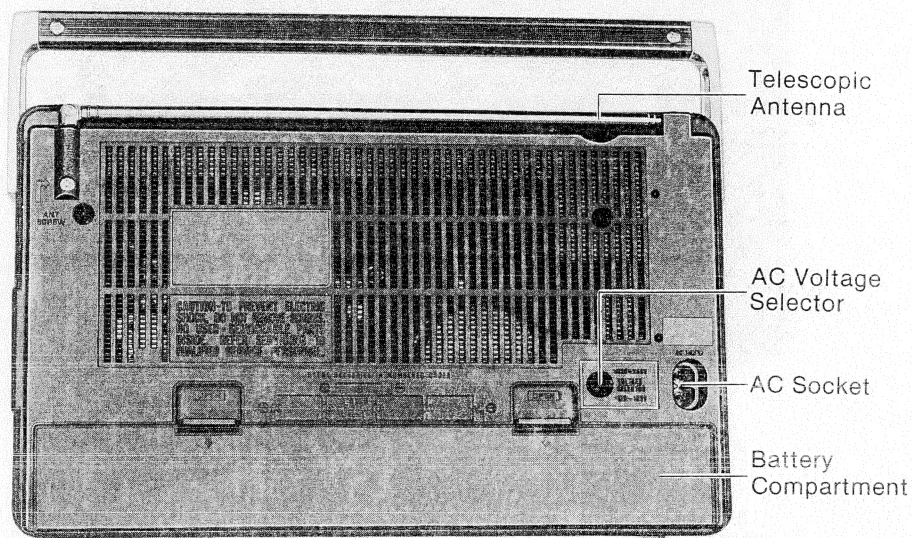
 **Panasonic**

Matsushita Electric Trading Co., Ltd.  
P.O. Box 288, Central Osaka Japan

# LOCATION OF CONTROLS AND COMPONENTS

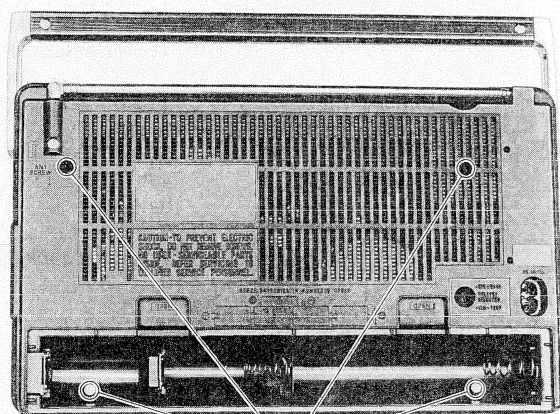


[Fig. 1]

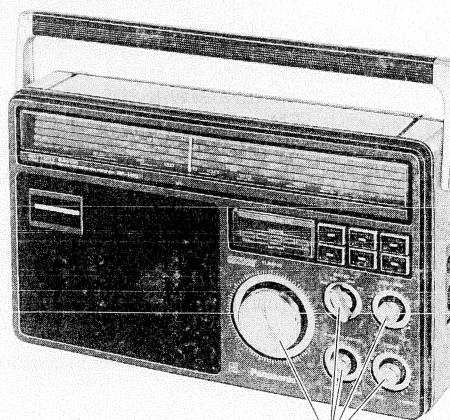


[Fig. 2]

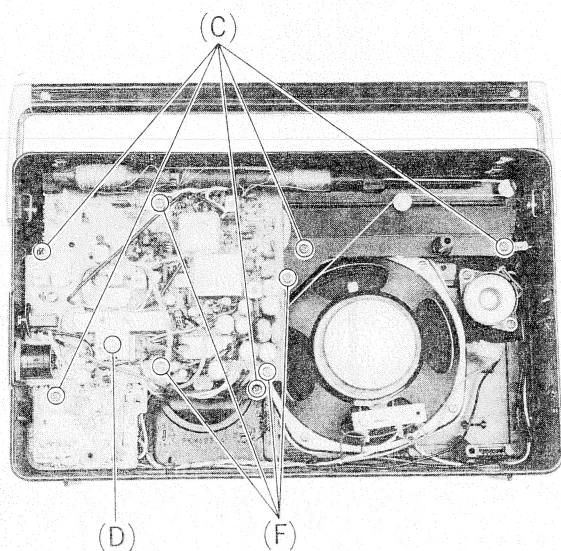
## DISASSEMBLY INSTRUCTION



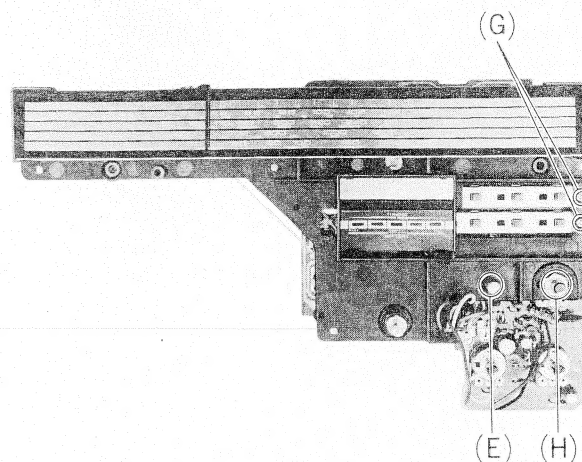
(A)  
[Fig. 3]



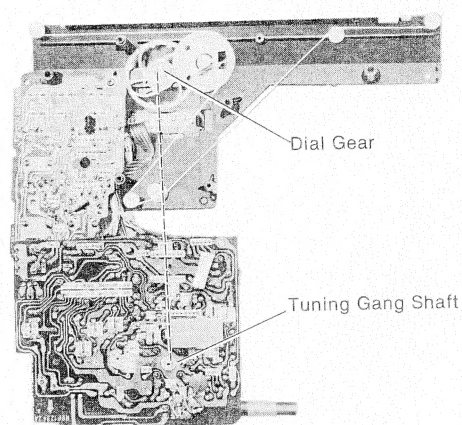
(B)  
[Fig. 4]



[Fig. 5]



[Fig. 6]



[Fig. 7]

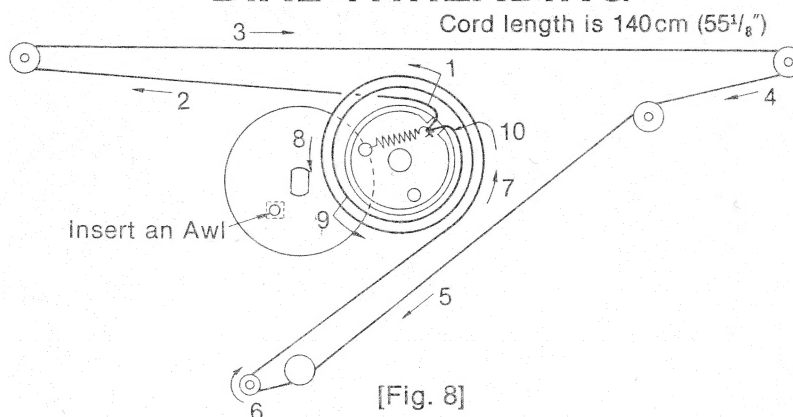
Procedure	To remove —.	Remove —.	Shown in Fig. —.
1	Chassis	Screws (3×35) .....(A)×4	3
2		Knobs .....(B)×5	4
3		Red Screws (3×12) .....(C)×5	5
4	Printed Circuit Board	Circlip .....(D)×1	5
5		Band Switch Shaft .....(E)×1	6
6		Screws (3×10) .....(F)×4	5
7		Screws (3×6) .....(G)×2	6
8		Nut (8φ).....(H)×1	6

**Notes:**

Turn tuning gang shaft to fully counter-clockwise.

Insert the tuning gang shaft in the hole of dial gear as shown in fig. 7.

## DIAL THREADING



[Fig. 8]

# ALIGNMENTS

## ■ ALIGNMENT INSTRUCTION

### READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

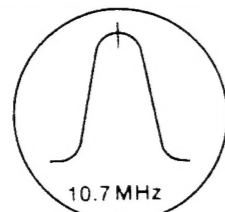
1. Set radio switch to ON.
2. Set volume control to maximum.
3. Set tone control to treble.
4. Set band switch to MW, LW, SW or FM.
5. Set meter switch to OFF.
6. Set AFC/DX-LOCAL switch to DX (AM) and OFF (FM).
7. Set source selector to radio.
8. Set loudness switch to OFF.
9. Set power source voltage to 7.5V DC.
10. Output of signal generator should be no higher than necessary to obtain an output reading.

## ■ LW, MW, AND SW ALIGNMENT

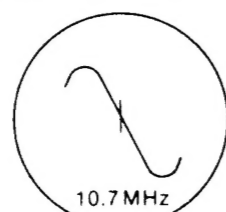
BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
AM IF ALIGNMENT						
(1)	MW	Fashion loop of serveral turns of wire and radiate signal into loop of receiver.	455kHz 30% Mod. at 400Hz	Point of non-interference.	Output meter across voice coil.	T2 (AM 1st IFT) T3 (AM 2nd IFT)  Adjust for maximum output.
LW-RF ALIGNMENT						
(2)	LW	"	145kHz	145kHz [19mm( <sup>3</sup> / <sub>4</sub> " )]	Output meter across voice coil.	L8 (LW OSC Coil) (*1) L5 (LW ANT Coil)  Adjust for maximum output. Adjust L5 by moving coil bobbin along ferrite core.
(3)	LW	"	285kHz	285kHz [160mm(6 <sup>5</sup> / <sub>16</sub> " )]	"	CT3 (LW OSC Trimmer) CT1 (LW ANT Trimmer)  Adjust for maximum output. Repeat steps (2) and (3).
(*1) Cement antenna bobbin with wax after completing alignment.						
MW-RF ALIGNMENT						
(4)	MW	"	550kHz	550kHz [19mm( <sup>3</sup> / <sub>4</sub> " )]	Output meter across voice coil.	L9 (MW OSC Coil) (*2) L6 (MW ANT Coil)  Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.
(5)	MW	"	1,500kHz	1,500kHz [160mm(6 <sup>5</sup> / <sub>16</sub> " )]	"	CT8 (MW OSC Trimmer) CT7 (MW ANT Trimmer)  Adjust for maximum output. Repeat steps (4) and (5).
(*2) Cement antenna bobin with wax after completing alignment.						
SW-RF ALIGNMENT						
(6)	SW	Connect to test point 1 through ceramic capacitor (10PF).	5.9MHz	5.9MHz [11mm( <sup>7</sup> / <sub>16</sub> " )]	Output meter across voice coil.	L10 (SW OSC Coil) L7 (SW ANT Coil)  Adjust for maximum output.
(7)	SW	Negative side to test point 2.	18MHz	18MHz [168mm(6 <sup>5</sup> / <sub>16</sub> " )]	"	CT4 (SW OSC Trimmer) CT2 (SW ANT Trimmer)  Adjust for maximum output. Repeat steps (6) and (7)

## ■ FM IF ALIGNMENT

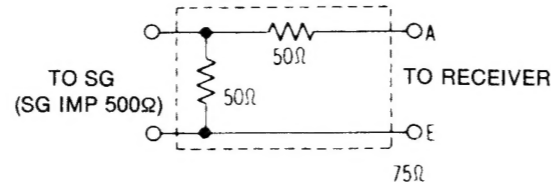
BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
(1) FM	Connect to test point 3 through 0.001μF. Negative side to point 2.	10.7MHz	Point of non-interference.	Connect vert. amp of scope to test point 5. Negative side to test point 4.	T1 (FM 1st)	Adjust for maximum amplitude. (Refer to Fig. 9.)
(2) FM	"	"	"	"	T4 (FM 2nd)	Adjust for maximum amplitude. (Refer to Fig. 10.)



[Fig. 9]





[Fig. 10]



[Fig. 11] FM Dummy Antenna

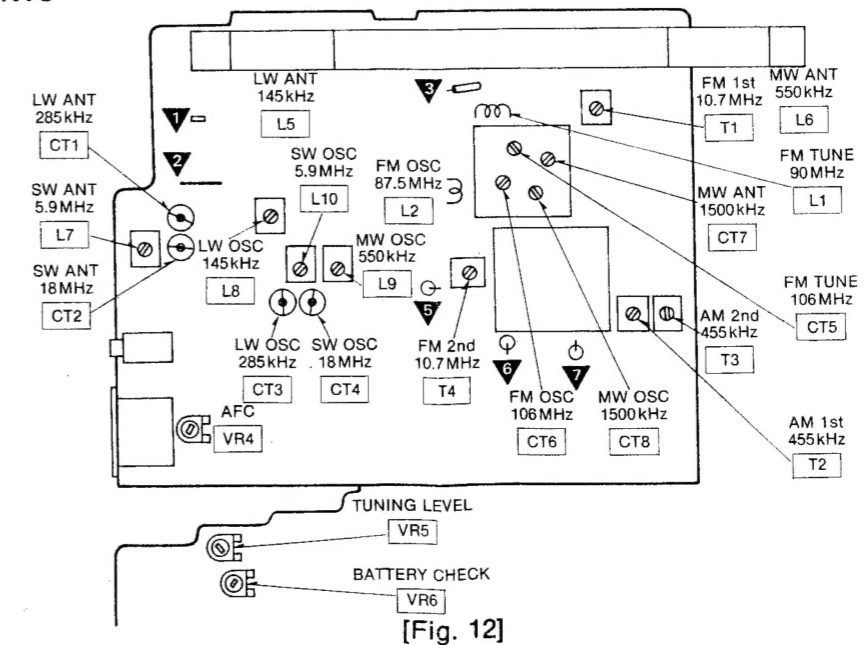
## ■ AFC, METER ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	AC VTVM	DC VTVM	ADJUSTMENT	REMARKS	
	CONNECTIONS	FREQUENCY						
AFC ALIGNMENT								
(1)	FM	 ... + ... -	98 MHz (10~15dB)	Tune to signal (AFC switch... ON)	Output meter across voice coil.	—	VR4	1. Set AFC switch to OFF. 2. Adjust VR4 for maximum output.
TUNING LEVEL ADJUSTMENT								
(2)	FM	"	"	Tune to signal.	—	 ... + ... -	VR5	1. Turn VR6 to fully clockwise. 2. Adjust signal generator for 0.65~0.7V reading on DC VTVM. 3. Adjust VR5 so that 2nd LED begins to fade away.
BATTERY CHECK								
(3)	FM	—	—	—	—	—	VR6	1. Set power source voltage to DC 4.5V. 2. Adjust VR6 so that 2nd LED begins to fade away.

## ■ FM RF ALIGNMENT

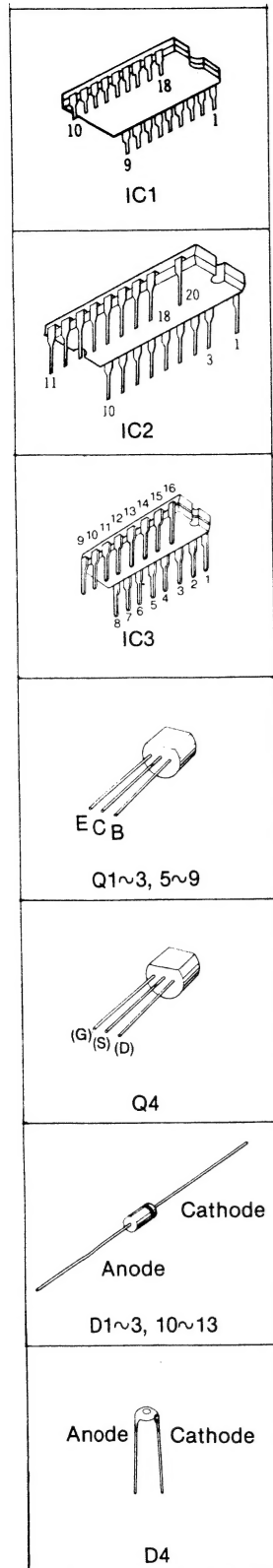
BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS	
	CONNECTIONS	FREQUENCY					
(1)	FM	Connect to test point 1 through FM dummy antenna. (Refer to fig. 11).	87.5MHz	Variable capacitor fully closed.	Output meter across voice coil.	L2 (FM OSC Coil)	(*3) Adjust for maximum output.
(2)	FM		90MHz	90MHz [21mm( <sup>27</sup> / <sub>32</sub> " )]	"	L1 (FM TUNE Coil)	(*3) Adjust for maximum output.
(3)	FM		106MHz	106MHz [150mm(5 <sup>29</sup> / <sub>32</sub> " )]	"	CT6 (FM OSC Trimmer) CT5 (FM TUNE Trimmer)	(*3) Adjust for maximum output. Repeat steps. (1)~(3).
(*3) Three output responses will be present; proper tuning is the center frequency.							

## ■ ALIGNMENT POINTS





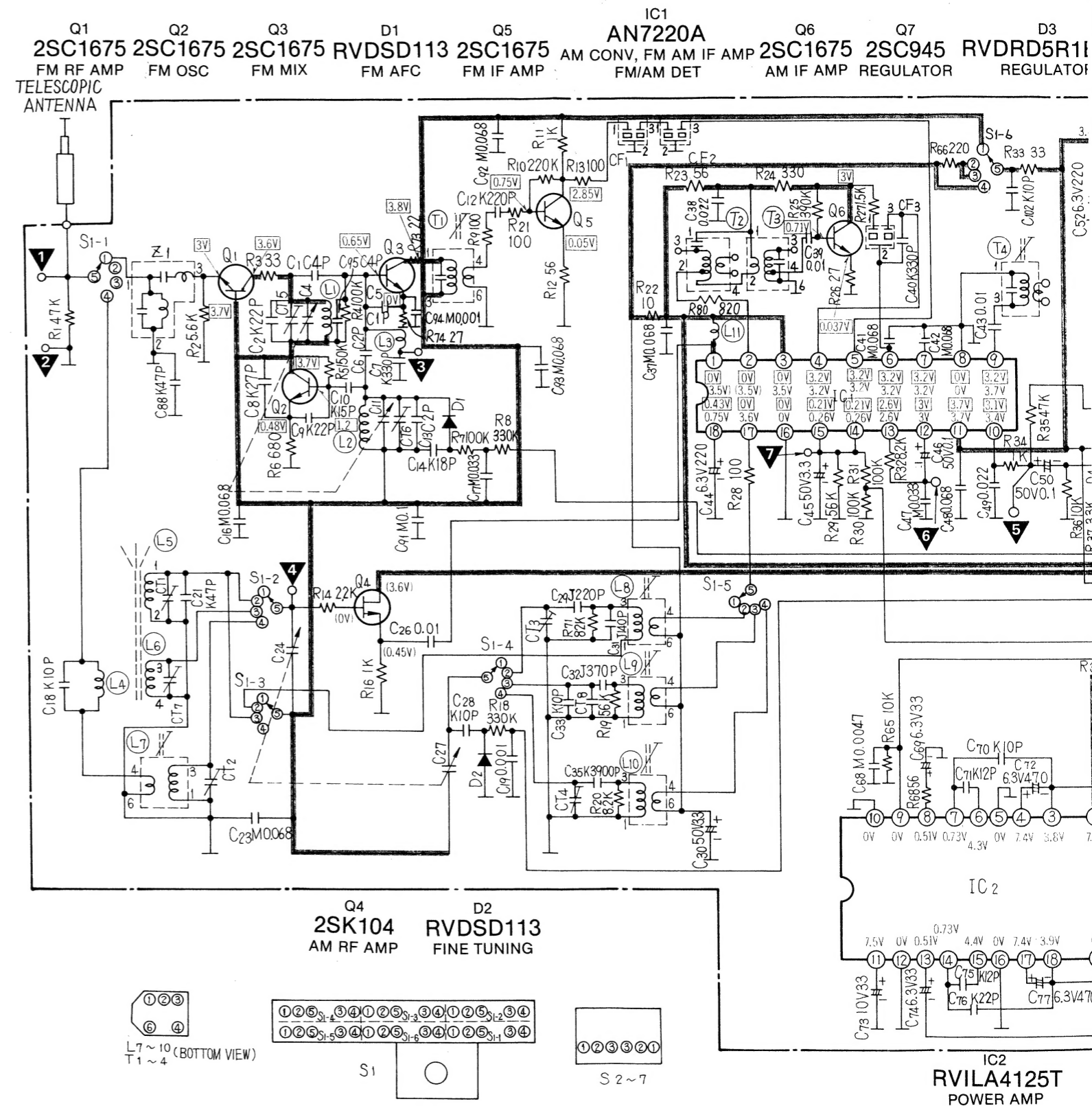
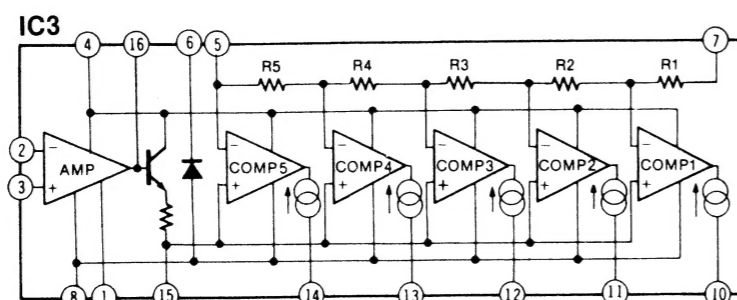
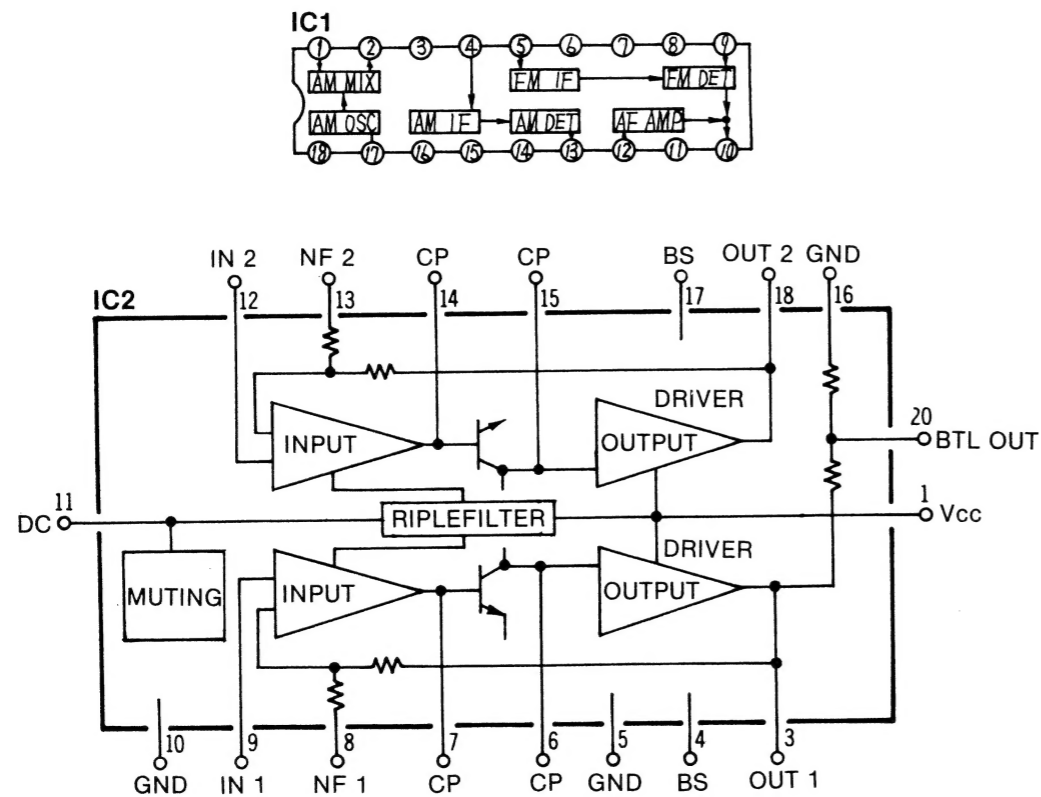
[Fig. 12]

## SCHEMATIC DIAGRAM MODEL

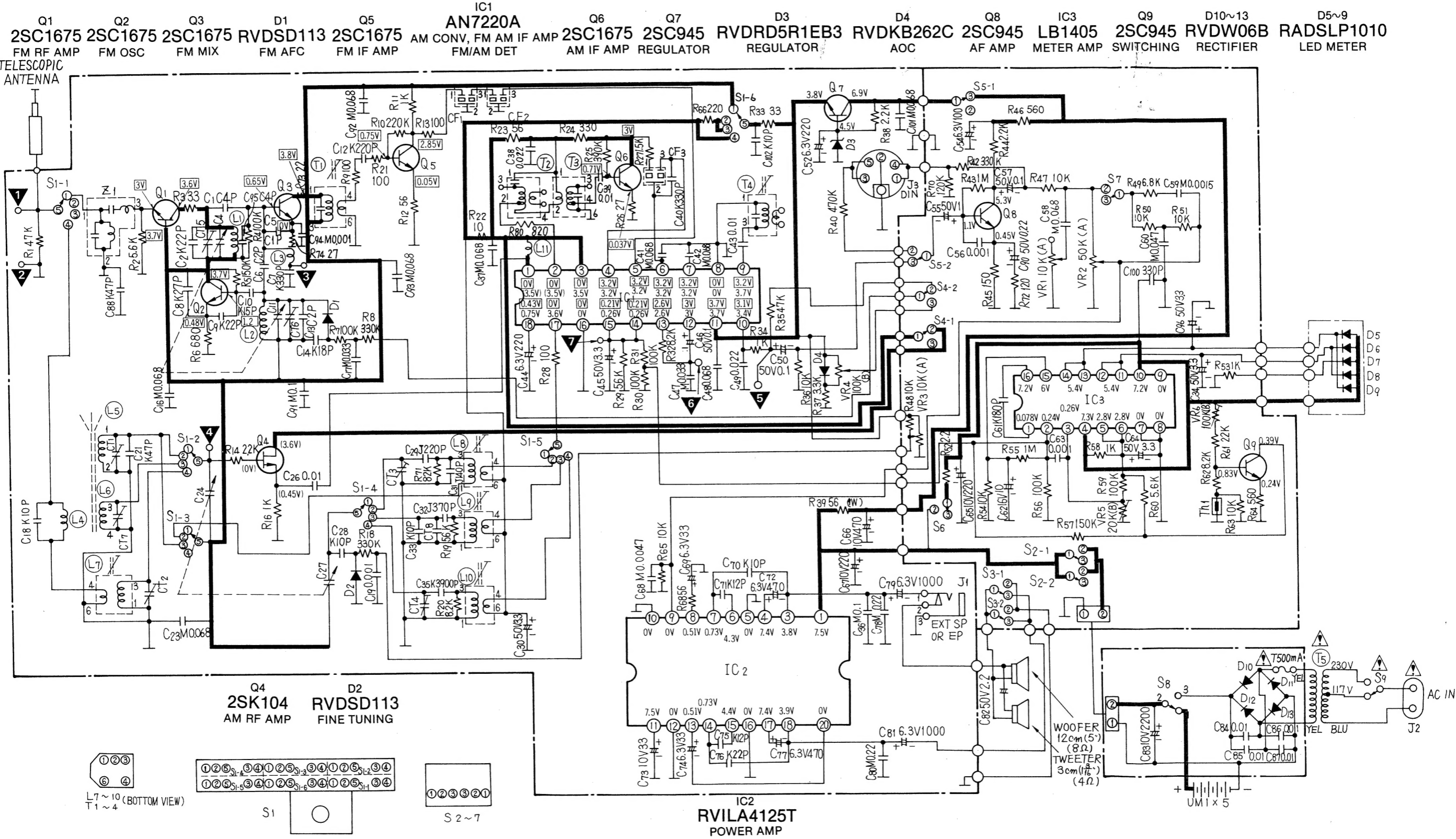


**Notes:**

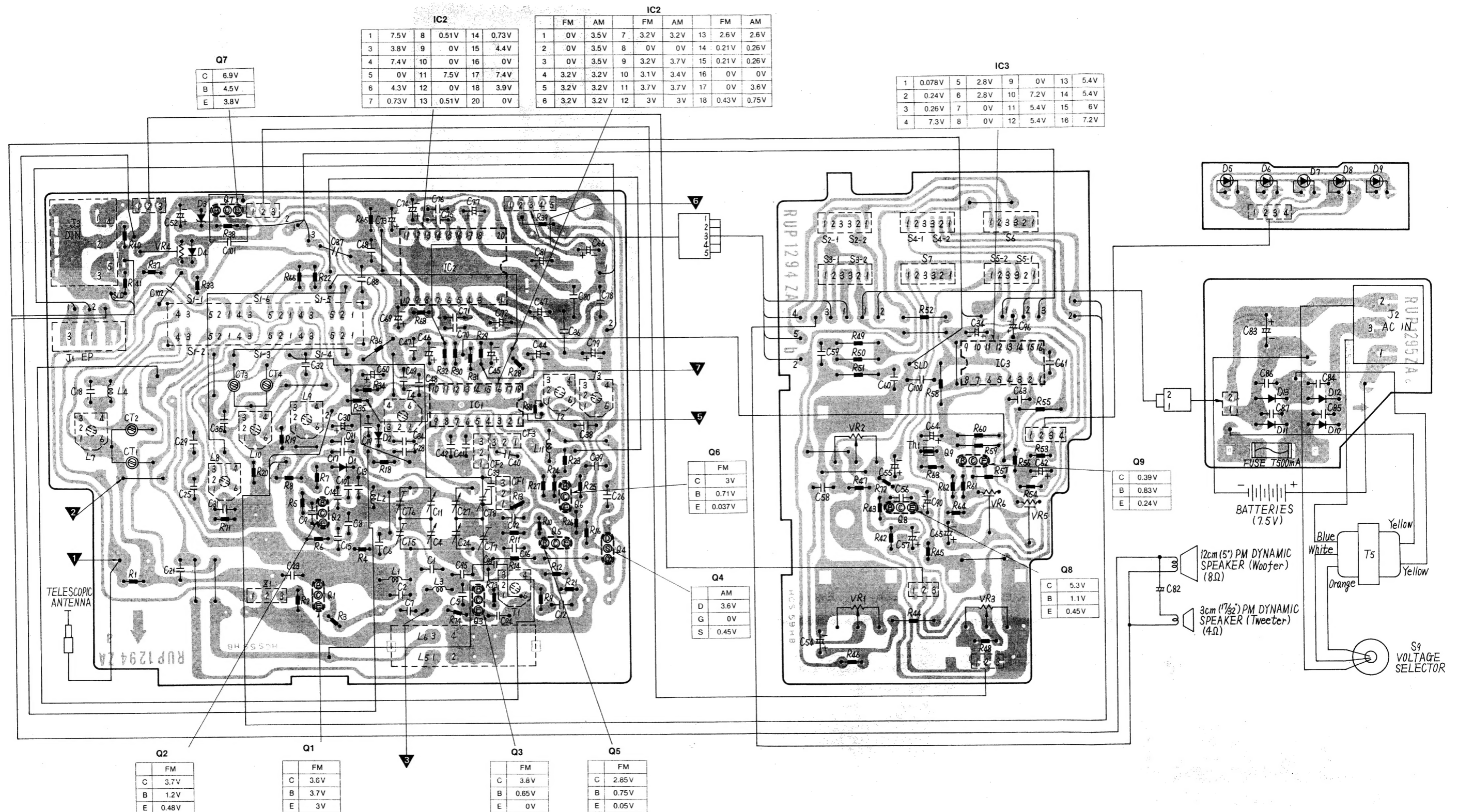
1. S1-1~S1-6: Band switch in “FM” position.  
(1...FM, 2...LW, 3...MW, 4...SW)
2. S2-1, S2-2: Radio switch in “OFF” position.  
(2...ON, 3... )
3. S3-1, S3-2: Battery saver switch in “OFF” position.  
(2...ON, 3...OFF)
4. S4-1, S4-2: AFC/DX-local switch in “ON/DX” position.  
(2...ON/DX, 3...OFF/LOCAL)
5. S5-1, S5-2: Source switch in “RADIO” position.  
(2...PHONO, 3...RADIO)
6. S6: Meter switch in “OFF” position.  
(2...ON, 3...OFF)
7. S7: Loudness switch in “OFF” position.  
(2...ON, 3...OFF)
8. S8: AC/DC switch in “DC” position.
9. S9: Voltage selector.
10. DC voltage measurements are taken with electronics voltmeter from negative terminal of battery.  
 ...FM position, (     )...AM position.
11. Battery current: No signal ..... 47 mA  
Maximum output .....530 mA
12. ⚠ indicates that only parts specified by the manufacture be used for safety.



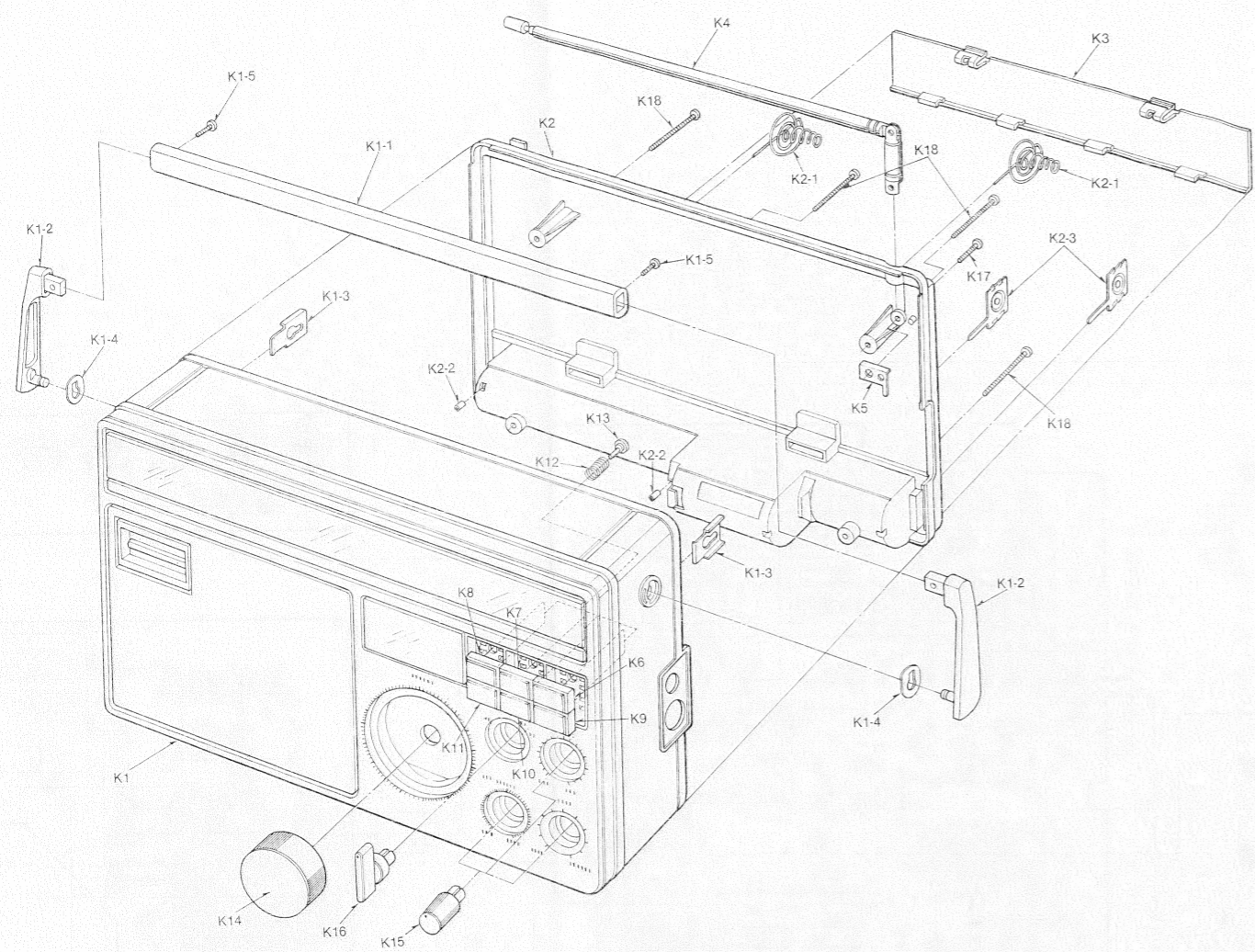
SCHEMATIC DIAGRAM MODEL RF-1410LBS



## CIRCUIT BOARD WIRING VIEW MODEL RF-1410LBS

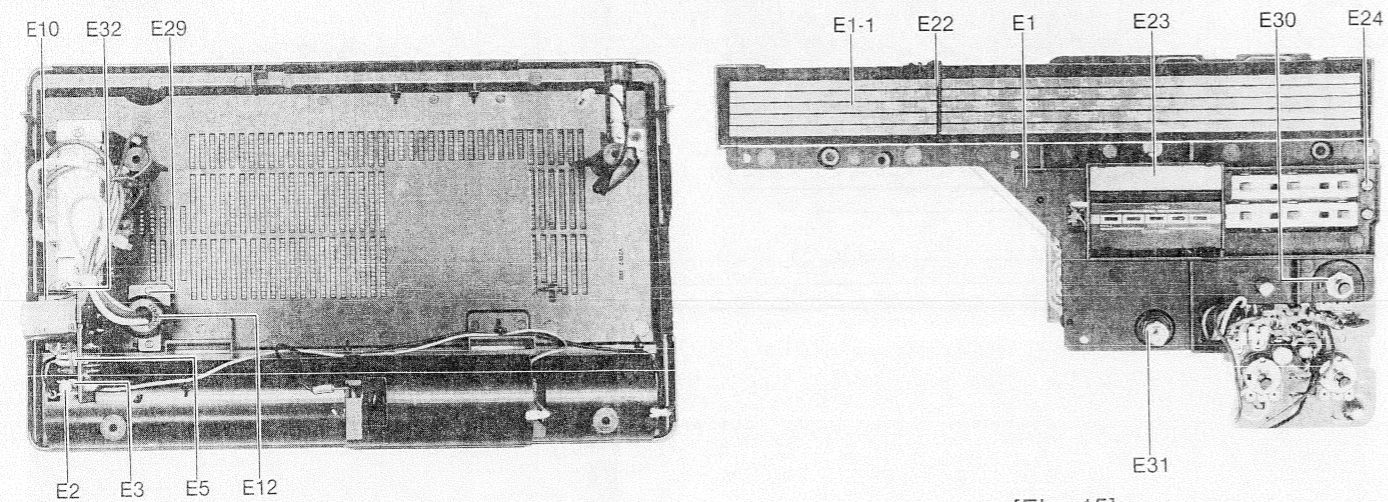


CABINET PARTS



[Fig. 13]

ELECTRICAL PARTS



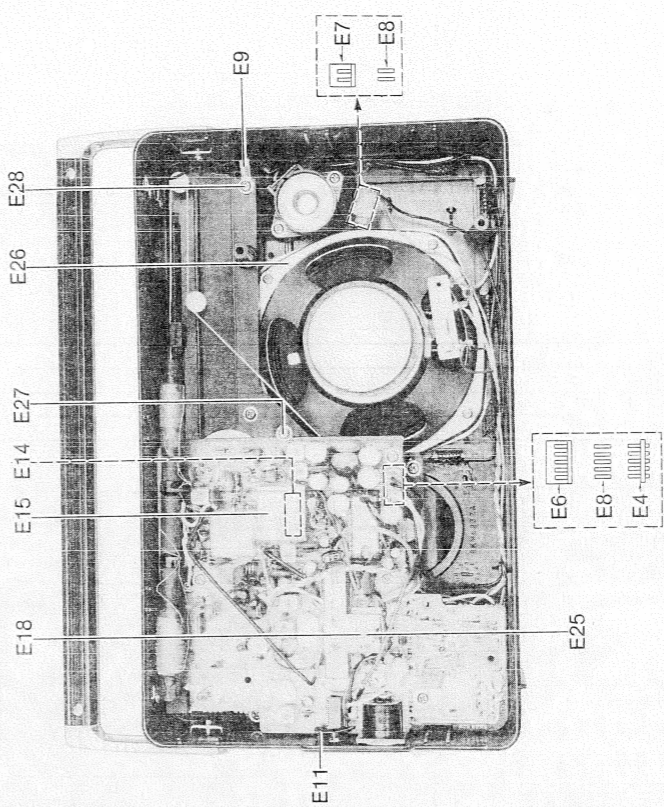
[Fig. 14]

[Fig. 15]

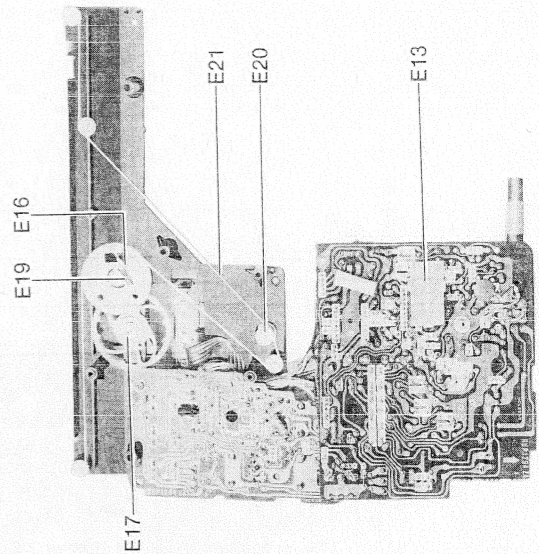
REPLACEMENT PARTS LIST .....Model RF-1410LBS (RD8006-5105C)

NOTES: 1. Δ indicates that only parts specified by the manufacturer be used for safety.  
2. The S mark indicates service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
INTEGRATED CIRCUITS, TRANSISTORS AND DIODES				
IC1	AN7220A	IC	1	
IC2	RV1LA4125T	IC	1	
IC3	LB1405	IC	1	
Q1, 2, 3, 5, 6	2SC1675	Transistor (Si)	5	
Q4	2SK104	Transistor (Si)	1	
Q7, 8, 9	2SC945	Transistor (Si)	3	
DL1, 2	RVDS0113	Diode (Si)	2	
D3	RVDR05R1EB3	Diode (Si)	1	
D4	RVDKB262C	Diode (Si)	1	
D5~9	RADSLP1010	LED (Ga)	1	
DL0~13	RVDW06B	Diode (Si)	4	
COILS AND TRANSFORMERS				
L1	RLD4Y44	Tuning Coil, FM	1	
L2	RLD4Y53	Oscillator Coil, FM	1	
L5, 6	RLF6F151	Antenna Coil, LW, MW	1	
L7	RLA3M10	Antenna Coil, SW	1	
L8	RL01M4	Oscillator Coil, LW	1	
L9	RL02M6	Oscillator Coil, MW	1	
L10	RL03M31	Oscillator Coil, SW	1	
TL1, 4	RLI4M101	IFT, FM	2	
T2	RLI2M216	IFT, AM	1	
T3	RLI2M217	IFT, AM	1	
T5	RLT5K136	Power Transformer	1	Δ
VARIABLE RESISTORS				
VR1, 3	EVH0XAF15A14	Variable Resistor, 10kΩ (A)	2	
VR2	EVH0XAF15A54	Variable Resistor, 50kΩ (A)	1	
VR4, 6	EVNM4AA00B15	Variable Resistor, 100kΩ (B)	2	
VR5	EVNK4AA00B24	Variable Resistor, 20kΩ (B)	1	
VARIABLE CAPACITORS				
C4, 11, 24, 27	RCV4RC2VL	Tuning Capacitor, w/Trimmer Capacitor CT5~8	1	
CT1~4	RCV2T-16M	Trimmer Capacitor	2	
CERAMIC FILTERS				
CF1, 2	RVPSFF107MSR	Ceramic Filter	2	
CF3	RVFCFM2455D	Ceramic Filter	1	
COMPONENT COMBINATION				
Z1	RXABPWB5	Component Combination	1	



[Fig. 16]



[Fig. 17]



Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C54	ECEA1AS101	100 10V Electrolytic	1	S
C69, 73, 74	ECEA1CS330	33 16V "	3	S
C62	ECEA1HS100	10 50V "	1	S
C72, 77	ECEA0JS471	470 6.3V "	2	S
C55	ECEA50Z1	1 50V "	1	S
C79, 81	ECEA0JS102	1000 6.3V "	2	S
C46, 50, 57	ECEA50ZR1	0.1 50V "	3	
C90	ECEA50ZR22	0.22 "	1	
C82	ECEA50N2R2	2.2 "	1	
C83	ECEA1CS222	2200 16V "	1	S
K1	RYMF1410LBSX	CABINET PARTS		
K1-1	RKX196Z	Front Cabinet Assembly	1	
K1-2	RKX198Z	Handle	1	
K1-3	QBP1817	Arm, Handle	1	
K1-4	RKX184Z	Stopper, Arm	2	
K1-5	XSBB3+6FZ	Washer, Arm	2	
K2	RYFF1410LBSX	Screw, Handle M'tg	2	
K2-1	RJC505Z	Rear Cabinet Assembly	1	
K2-2	RJT398A	Spring, Battery - Side	2	
K2-3	RJC111A	Connecting Pipe, Spring	2	
K3	RYNF1410LBSX	Terminal, Battery + Side	2	
K4	XEACR228EAY	Battery Cover Assembly	1	
K5	RJT711Z	Telescopic Antenna	1	
K6	RBC279Z	Terminal, Telescopic Antenna	1	
K7	RBC279Y	Button, RADIO	1	
K8	RBC279X	Button, AFC/DX-LOCAL	1	
K9	RBC279W	Button, METER	1	
K10	RBC279V	Button, BATT SAVER	1	
K11	RBC279U	Button, LOUDNESS	1	
K12	RDS5104Z	Button, SOURCE SELECTOR	1	
K13	RHR1119Z	Spring, Button	6	
K14	RBN533Z	Stopper, Button	6	
K15	RBN534Z	Knob, Tuning	1	
K16	RBS168Z	Knob, Volume, Tone, Fine Tuning	3	
K17	XYN3+FI5FZ	Knob, Band	1	
K18	XTB3+35BFN	Screw, Telescopic Antenna M'tg	1	S
E1	RZAF1410LBSX	ELECTRICAL PARTS		
E1-1	RKD558Z	Dial Chassis Assembly	1	
E2	XBA2C05TR0	Scale, Dial	1	
E3	QTF1054	Fuse, T500mA	1	
E4	RJP116Z	Terminal, Fuse	2	
E5	RJP213Z	Plug, 5 Pin	1	
E6	RJS217Y	Plug, 2 Pin	1	
E7	RJS171Z	Socket, 5 Pin	1	
E8	RJT462Z	Socket, 2 Pin	1	
E9	RJT202B	Terminal, Socket	7	
E10	RUV482Z	Terminal, Earth	2	
E11	RUV118B	Cover, AC IN Socket	1	
E12	RUV426Z	Cover, Voltage Selector	1	
E13	RMC382Z	Shield Cover	1	
E14	RMC506Z	Shield Cover, ICI	1	
E15	RMC706Z	Shield Cover	1	
E16	RDD3383Z	Drum, Dial	1	
E17	RDC5693Z	Gear, Dial	1	
E18	RDF230Z	Shaft, Band Switch	1	
E19	RDS4090A	Spring, Dial	2	
E20	RDT2252Z	Shaft, Tuning	1	
E21	RDZ05Z	Cord, Dial	1	
E22	RDP809Z	Pointer, Dial	ROLL	
E23	RGR952Z	Indicating Plate, LED	1	
E24	XSN3+6S	Screw, Function Switch M'tg	1	
E25	XUC25FY	Circlip, Band Switch Shaft M'tg	2	S
E26	RMS5Y	Bracket, Speaker	1	
E27	XTW3+10F	Screw, PC Board etc M'tg	1	
E28	XTW3+12FR	Red Screw, Chassis M'tg	9	
E29	XTN23+8C	Screw, Voltage Selector M'tg	5	
E30	XNS8	Nut, Volume M'tg	2	
E31	XNS9	Nut, Tuning Shaft M'tg	1	S
E32	XTW3+8F	Screw, AC IN Jack etc M'tg	6	S
	ACCESSORIES			
	XEH1A1-P	Magnetic Earphone	1	S
	RJA20Z	Power Cord, AC	1	S
	RQE13Z	Caution Tag	1	
	PACKING MATERIALS			
	XZB40X30A04	Polyethylene Cover	1	S
	RPN9346Z	Pad Complete	1	
	RPK980Z	Gift Box	1	
	RQE13Z	Caution Tag	1	
	PRINTED MATERIAL			
	RQX6580Z	Instruction Book	1	